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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Gillihan, Thomas

Group Art Unit: 2722

Serial No.: 09/128,580

Examiner: Popovici, D.

Filed : 08/04/98

Title : PRINTER CONTROLLER FOR ERROR RECOVERY WITH MULTIPLE LANGUAGE CAPABILITY

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September 21, 2000

Assistant Commissioner for Patents  
Washington, DC 20231

### APPEAL BRIEF ON BEHALF OF APPLICANTS

Dear Sir:

#### BACKGROUND

This brief is in furtherance of the Notice of Appeal, filed herewith for this case.

The fee required under 37 C.F.R. § 117 accompanies the Notice of Appeal.

This brief is transmitted in triplicate. (37 C.F.R. 1.192(a))

This brief comprises these subjects under the headings, and in the order, set forth below:

- I. Real Party in Interest
- II. Related Appeals and Interferences
- III. Status of Claims
- IV. Status of Amendments
- V. Summary of Invention

VI. Issues

VII. Grouping of Claims

VIII. Argument

IX. Conclusion

X. Appendix

The final page of this brief bears the practitioner's signature.

Real Party in Interest

The real parties in interest in this appeal is the party in the caption of this brief and the co-inventor Larry Alan Westerman who have assigned their rights to Sharp Laboratories of America, Inc.

Related Appeals and Interferences

There are no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal.

Status of Claims

A. Total Number of Claims in the Application - 18

B. Status of All Claims

Claims canceled: None

Claims withdrawn: None

Claims pending: 1 - 18

Claims allowed: None

Claims rejected: 1 - 18

C. Claims on Appeal

Claims 1 - 18 are on appeal.

A copy of the claims on appeal is set forth in the Appendix to this Brief.

Status of Amendments

No amendment has been filed subsequent to final rejection.

### Summary of Invention

The appellants' invention relates to a print engine including multiple language capability and provisions for error recovery.

Computer networks commonly provide for sharing resources, including printers, print servers, and scanners, among a number of terminals attached to the network (page 1, lines 30 - page 2, line 5). Typical printer servers and many printers support several print drivers utilizing different page description languages (PDLs) which serve as the interface between a print driver or client and a printer server or printer (page 2, lines 4-15). PDLs typically include synchronization and setup data which identifies the PDL for the document. The synchronization and setup are typically located at the beginning of the document and may be located at intermediate locations within the document, at the beginning of segments or portions of the document (page 3, line 36 - page 4, line 3).

The printing process typically involves a series of steps and processes that proceed in a predefined manner. Initially, a new document is received by a master control 40, see FIG.3, which manages the initiation and termination of the other process within the printer (page 7, lines 10 -13). Upon receipt of the document, the master control 40 reads the data stream from a print job and stores data in a data buffer (page 7, lines 14 -18). A printer description language (PDL) determination process 44 examines data in the data buffer and identifies the PDL encoding of the document (page 7, lines 19 - 23) from the synchronization and setup data in the initial portions of the data buffer contents. Following identification of the appropriate PDL, a parsing process is initiated which reads data from the buffer and creates the output bitmap which is transformed into the printed page (page 7, lines 28 - 35).

In prior art print engines, the PDL determination process is terminated once the PDL is identified because the remainder of the document or document segment is always encoded using the same PDL (page 7, lines 28 - 33). If an error occurs, the parsing process 46 terminates and the master control 40 restarts the PDL determination process to search for the next synchronization point (page 7, lines 36 - page 8, line 6). Often an error in a first document or document section

corrupts the "end of document codes" of for that document or segment. This causes the parsing process to parse the synchronization codes of the next document or document section with the result that the restarted PDL determination process fails to correctly identify the appropriate PDL until a third occurrence of the synchronization data (page 8, lines 12 - 32). On the other hand, while searching for synchronization data, the corruption of end of document codes may cause the reinitiated PDL identification process to locate data within the body of the next document or segment corresponding to synchronization data identifying an incorrect PDL (page 8, lines 33 - 35) for the document. This may cause the wrong parsing process to be initiated. In either event, the printer prints several pages of "garbage."

In the print engine of the invention, when sufficient data is received in the buffer (the first process), the master control process 40 initiates the PDL determination process 84 (the second process) to determine the PDL of the data stream (page 9, lines 8 - 13). Once the PDL is identified the PDL parsing process (the third process) is initiated, but the PDL determination process continues to execute, reading characters from the buffer 83 and determining potential points at which the PDL may have changed (page 9, lines 13 - 18). If erroneous data is detected in the data stream, the PDL parsing process 88 exits with an error condition and the PDL determination process 84 immediately determines the most probable PDL based on synchronization and setup data at the last prior intermediate location signaled by the parsing process 88 (page 10, lines 7 - 13). The result is proper printing of the data stream.

### Issues

The issues presented for review are:

- I. Are claims 1 - 18 patentable under 35 U.S.C. 102 over Pavlovic et al. U.S. Patent No. 5,715,379?
- II. Are claims 1 - 8 and claims 10 - 17 patentable under 35 U.S.C. 102(b) over Steeves et al., U.S. Patent No. 5,075,874?
- III. Are claims 9 and 18 patentable under 35 U.S.C. 103(a) over Pavlovic et al. or Steeves et al. in view of Nihara et al., U.S. Patent 5,854,940?

### Grouping of Claims

For the purposes of this appeal:

1. Claims 1 - 18 should be treated as a group as to issue I (patentability over Pavlovic et al. U.S. Patent No. 5,715,379).
2. Claims 1 - 8 and claims 10 - 17 should be treated as a group as to issue II (patentability over Steeves et al., U.S. Patent No. 5,075,874).
3. Claims 9 and 18 should be treated as a group as to issue III (patentability over the combination of Pavlovic or Steeves et al. and Nihara et al., U.S. Patent 5,854,940).

### Argument

- I. Are claims 1 - 18 patentable under 35 U.S.C. 102 over Pavlovic et al. U.S. Patent No. 5,715,379?

In the office action of August 7, 2000, claims 1-18 were rejected under 35 U.S.C. 102(e) as being anticipated by Pavlovic et al, U.S. Patent No. 5,715,379. The Appellants submit, that to anticipate under 35 U.S.C. 102, "the reference must teach every aspect of the claimed invention, either explicitly or impliedly; any feature not directly taught must be inherently present," MPEP 706.02(a). As indicated in the application (page 7, lines 28 - 33) in prior art print engines the PDL identification process is terminated after the process has examined the first few characters of a document or document subdivision and identified the appropriate PDL parsing process. Prior art print engines will print "garbage" following an error (page 8, line 12 - page 9, line 3) that corrupts the "end of document" codes of a first document because the PDL parsing process may not notify the master control process 40 of the error until several "start of document" codes (synchronization and setup data) for the subsequent document or document segment have been parsed and lost to examination by the restarted PDL determination process. In addition, the loss or corruption of the "end of document" codes may cause the reinitiated PDL determination process to mistakenly

identify data contained in the next document as synchronization data. As a result, the wrong parsing process may be applied to the misidentified document or segment. In the improved print engine the PDL determination process continues to execute while the document is being parsed by the appropriate PDL parsing process. As the document is parsed, the PDL determination process continues reading characters from the data stream buffer and continues to determine if the PDL may have changed.

The print system disclosed by Pavlovic et al. includes a decomposition facility 110 comprising a plurality of separate and independent decomposers (col. 4, line 26). The operation of the PDL determination process of Pavlovic et al. is described at column 4, lines 36 - 43 as follows:

In order to determine which particular decomposer is required for a particular set of data, either different required decomposition facility can be specifically called into action by use of "guessing" algorithms associated with some controller of the decomposition facility 110. Such "guessers," such as detecting "%!" commands to identify PostScript files are known in the art.

While Pavlovic et al. disclose a spool for receiving a document, a plurality of decomposers, and "some controller" and a guessing algorithm to identify the appropriate decomposer (a second process), the Appellants submit Pavlovic et al. do not explicitly state that the operation of the controller and guessing algorithm does not terminate after the proper parser has been identified and before parsing is initiated. Further, the Appellants submit that continued operation of the decomposer selection facility until parsing (the third process) is initiated is not implied by Pavlovic et al. While the PDL determination process of Pavlovic et al. may be reinitiated at intermediate locations within a document, there is no indication that the determination process does not again terminate once it has identified a PDL for a next document section or that the PDL determination process operates concurrently with the parsing process at any time. The Appellants submit that Pavlovic et al. disclose a prior art print engine and does not anticipate the print engine of claim 1. Likewise with respect to claim 10, the applicant submits that there is no indication in Pavlovic et al., explicit or implied, that a step of

document examination for synchronization data continues while the document is being parsed. For these reasons, it is also submitted that Pavlovic et al. do not anticipate claims 2-9 and claims 11-18 which are dependent from claims 1 and 10, respectively.

II. Are claims 1 - 8 and claims 10 - 17 patentable under 35 U.S.C. 102(b) over Steeves et al., U.S. Patent No. 5,075,874?

Claims 1-8 and 10-17 were also rejected under 35 U.S.C. 102(b) as anticipated by Steeves et al., U.S. Patent No. 5,075,874. According to the office action of August 7, 2000, Steeves et al. disclose a print engine comprising: (a) a first process receiving a document (receiving in buffers 23-26); (b) a second process (100) that examines the document to select which of a plurality of third processes (104, . . . , 126) is suitable to parse the printer description language; (c) a first and a second, third processes to process the document using two PDLs; and (e) the "second process (100) not terminating prior to the selected third process parsing the document." Steeves et al. describe a process manager 100 that monitors the status of buffers in RAM. When it sees data in the buffer, it "determines which emulation module is the current one for the corresponding port" and "calls the appropriate emulation module" (col. 4, lines 38-42). The selected emulation module retrieves the input data from the buffer and translates the input instruction set to a common low-level instruction set employed by the printer (col. 4, lines 43-46). When the emulation module has filled a page or runs out of data, it notifies the process manager 100 that the page is ready to print and the process manager communicates with the logic and control unit (LCU) to start the print head (col. 4, lines 59-67). The Appellants submit that Steeves et al. do not explicitly indicate that the process manager 100 continues to examine the data in the buffer to determine if the PDL has changed once it has identified the document's PDL and notified the appropriate emulation module. Further, the Appellants submit Steeves et al. do not imply that the PDL identification process does not terminate before the third process is initiated. The applicant submits that Steeves et al. do not anticipate claim 1 and, therefore, dependent claims 2-8. Likewise, Steeves et al. do not anticipate claim 10

because there is no indication that Steeves et al. include a step wherein the examination process of step (b) is applied to search for synchronization data while the document is being parsed. Since the independent claim 10 is not anticipated, dependent claims 11-17 are, likewise, not anticipated.

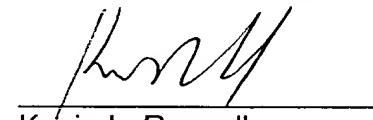
III. Are claims 9 and 18 patentable under 35 U.S.C. 103(a) over Pavlovic et al. or Steeves et al. in view of Nihara et al., U.S. Patent 5,854,940?

Claims 9 and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over either Pavlovic et al. (U.S. Patent No. 5,715,379) or Steeves et al. (U.S. Patent 5,075,874) in view of Nihara et al. (U.S. Patent 5,854,940). According to the office action of August 7, 2000 (page 11) neither Pavlovic et al. nor Steeves et al. teach (a) the third selected process detecting an error within one of the documents; and (b) the second process initializing a different one of the selected third processes in response to the selected third process detecting an error within the document. According to the office action, the teaching of Nihara et al. could be used to modify Pavlovic or Steeves to eliminate this difference. However, claims 9 and 18 are dependent claims, depending from claims 8 and 17 respectively. For the reasons stated above, the Appellants submit that Pavlovic et al. and Steeves et al. do not anticipate claims 1 and 10 and, therefore, dependent claims 7 and 17. The Appellants submit that Nihara et al. do not teach a PDL determination process not terminating prior to the initiation of a parsing process or continuing during the parsing and, therefore, combinations of Nihara et al. and Pavlovic or Steeves do render claims 9 and 18 obvious.

Conclusion

The Appellants respectfully submit that the Examiner's final rejection of claims 1 - 18 for anticipation under 35 U.S.C. 102 and claims 9 and 18 under 35 U.S.C. 103 should be reversed and, consequently, the claims should be found patentable.

Respectfully submitted,



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## APPENDIX

1. A print engine for a printer comprising:
  - (a) a first process that receives a document to be printed on a printer;
  - (b) a second process that examines said document to select which of a plurality of third processes is suitable to parse the printer description language of said document;
  - (c) a first one of said plurality of third processes parsing said document using a first printer description language in response to said selection of said second process;
  - (d) a second one of said plurality of third processes parsing said document using a second printer description language in response to said selection of said second process; and
  - (e) said second process not terminating prior to said selected third process initiating said parsing of said document.
2. The print engine of claim 1 wherein said second process continues to examine said document for synchronization data while said third process parses said document.
3. The print engine of claim 1 wherein said second process is a printer description language determination process and said first process is a data receiver process.
4. The print engine of claim 1 wherein said third processes are printer description language parsing processes for different printer description languages.
5. The print engine of claim 1, further comprising a master control process that receives and responds to internal and external data sensor input.

6. The printer engine of claim 1 wherein said first printer description language is selected from the group of HP-PCL, PostScript, and Interpress Page Description Language.

7. The printer engine of claim 1, further comprising:

- (a) said first process receives a plurality of documents; and
- (b) said second process examines each of said plurality of documents to select which of said plurality of third processes are suitable to parse the printer description language of each of said respective documents.

8. The printer engine of claim 7, further comprising:

- (a) said second process examines said plurality of documents for synchronization data; and
- (b) said second process examining said document for said synchronization data simultaneously with said selected third process parsing said document.

9. The printer engine of claim 8, further comprising:

- (a) said selected third process detecting an error within one of said documents; and
- (b) said second process initializing a different one of said selected third processes in response to said selected third process detecting an error within said document.

10. A method of printing documents comprising the steps of:

- (a) receiving a document to be printed on a printer;
- (b) examining said document to select one of a plurality of parsers suitable to parse the printer description language of said document;
- (c) in response to step (b) processing said document by selecting at least one of a first printer description language and a second printer description language and parsing said document using said at least one of said first and said

second printer description languages; and

(d) said examining of step (b) continuing to examine said document for synchronization data while said parsing of step (c).

11. The print engine of claim 10 wherein said receiving of step (a) is a data receiver process.

12. The print engine of claim 10 wherein said examining said document of step (b) is a printer description language determination process.

13. The print engine of claim 10 wherein said processing of step (c) are printer description language parsing processes for different printer description languages.

14. The print engine of claim 10, further comprising the step of providing a master control process that receives and responds to internal and external data sensor input.

15. The printer engine of claim 10 wherein said first printer description language is selected from the group of HP-PCL, PostScript, and Interpress Page Description Language.

16. The printer engine of claim 10, further comprising the steps of:

- (a) receiving a plurality of documents; and
- (b) examining each of said plurality of documents to select which printer description language is suitable to parse the printer description language of each of said respective documents.

17. The printer engine of claim 16, further comprising the steps of:

- (a) examining said plurality of documents for synchronization data; and
- (b) examining said documents for said synchronization data while said

processing said document by said selecting said at least one of said first printer description language and said second printer description language.

18. The printer engine of claim 17, further comprising the steps of:
  - (a) detecting an error within one of said documents; and
  - (b) initializing a different one of said selected said at least one of a first printer description language and said second printer description language.